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(54) Title: METHOD FOR SPATIALLY RESOLVED DETERMINATION OF MAGNETIC PARTICLE DISTRIBUTION IN AN AREA OF EXAMINATION

(57) Abstract: The present invention relates to a method for improved spatially resolved determination of magnetic particle distribution in an area of examination, where the changes in spatial distribution, the concentration and/or the anisotropy of these magnetic particles in the area of examination are monitored. The invention further also relates to magnetic particle compositions having improved magnetic imaging properties for use in the method according to the invention. The present invention further also relates to a method and an apparatus having improved spatial resolution in the method according to the invention by application of a high frequency field to increase the spin temperature of the spin systems of the magnetic particles.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/050446

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61B5/06 A61K49/18

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	EP 1 304 542 A (PHILIPS CORP INTELLECTUAL PTY ; KONINKL PHILIPS ELECTRONICS NV (NL)) 23 April 2003 (2003-04-23) paragraphs [0030] - [0040], [0050] - [0054] -----	36,37
X	HINSHAW W S: "Image formation by nuclear magnetic resonance: the sensitive-point method" JOURNAL OF APPLIED PHYSICS USA, vol. 47, no. 8, August 1976 (1976-08), pages 3709-3721, XP001182859 ISSN: 0021-8979 cited in the application paragraph [III.] figure 2 ----- -/-	36,37

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

8 September 2004

Date of mailing of the international search report

10.12.2004

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/050446

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 095 124 A (BRUKER MEDIZINTECH) 30 November 1983 (1983-11-30) cited in the application page 3, paragraph 2 page 12, paragraph 3 -----	36
A	US 6 082 366 A (ANDRAE WILFRIED ET AL) 4 July 2000 (2000-07-04) column 4, line 48 - column 5, line 55 -----	36

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2004/050446

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 1-13, 34, 35  
because they relate to subject matter not required to be searched by this Authority, namely:  
**Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery**
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 36, 37

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13, 36, 37

A method for the spatially resolved determination of magnetic particle distribution, a method to improve resolution when carrying out said method and a corresponding arrangement.

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2. claims: 14-35

Magnetic particle composition having a particular magnetization curve and its use.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 1-13, 34,35

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/050446

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
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